

Fig. 1

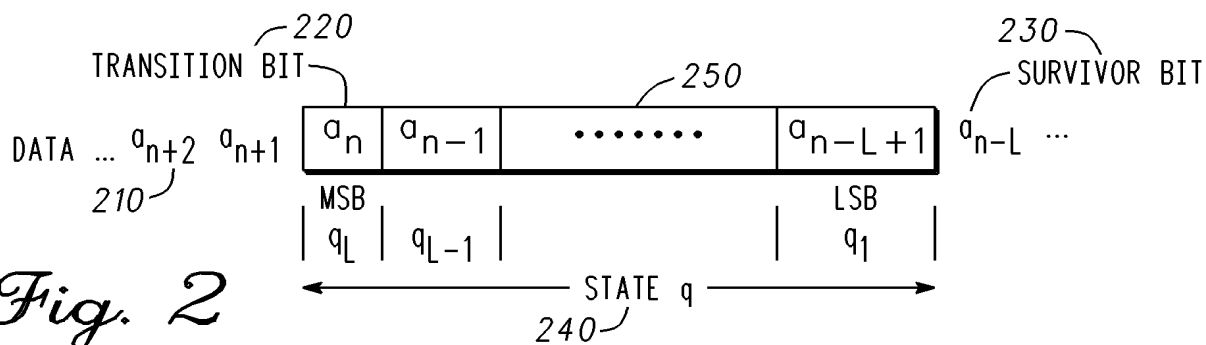


Fig. 2

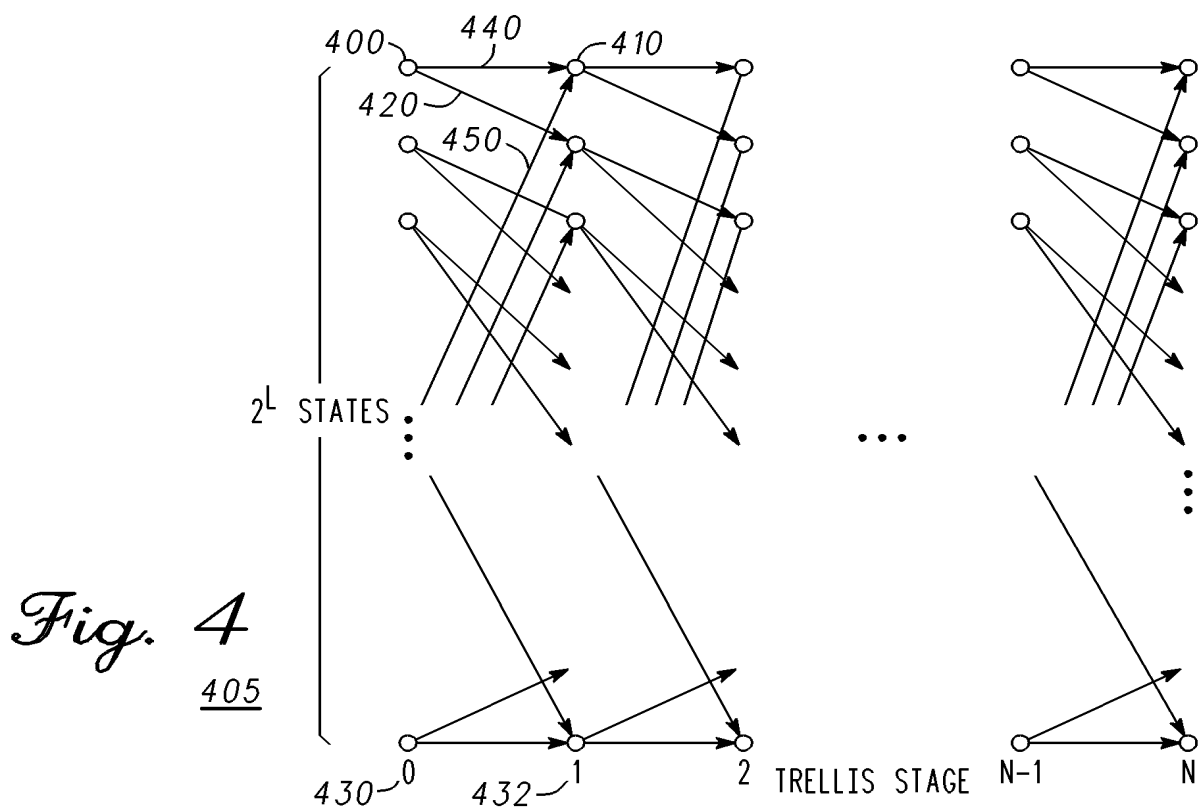


Fig. 4

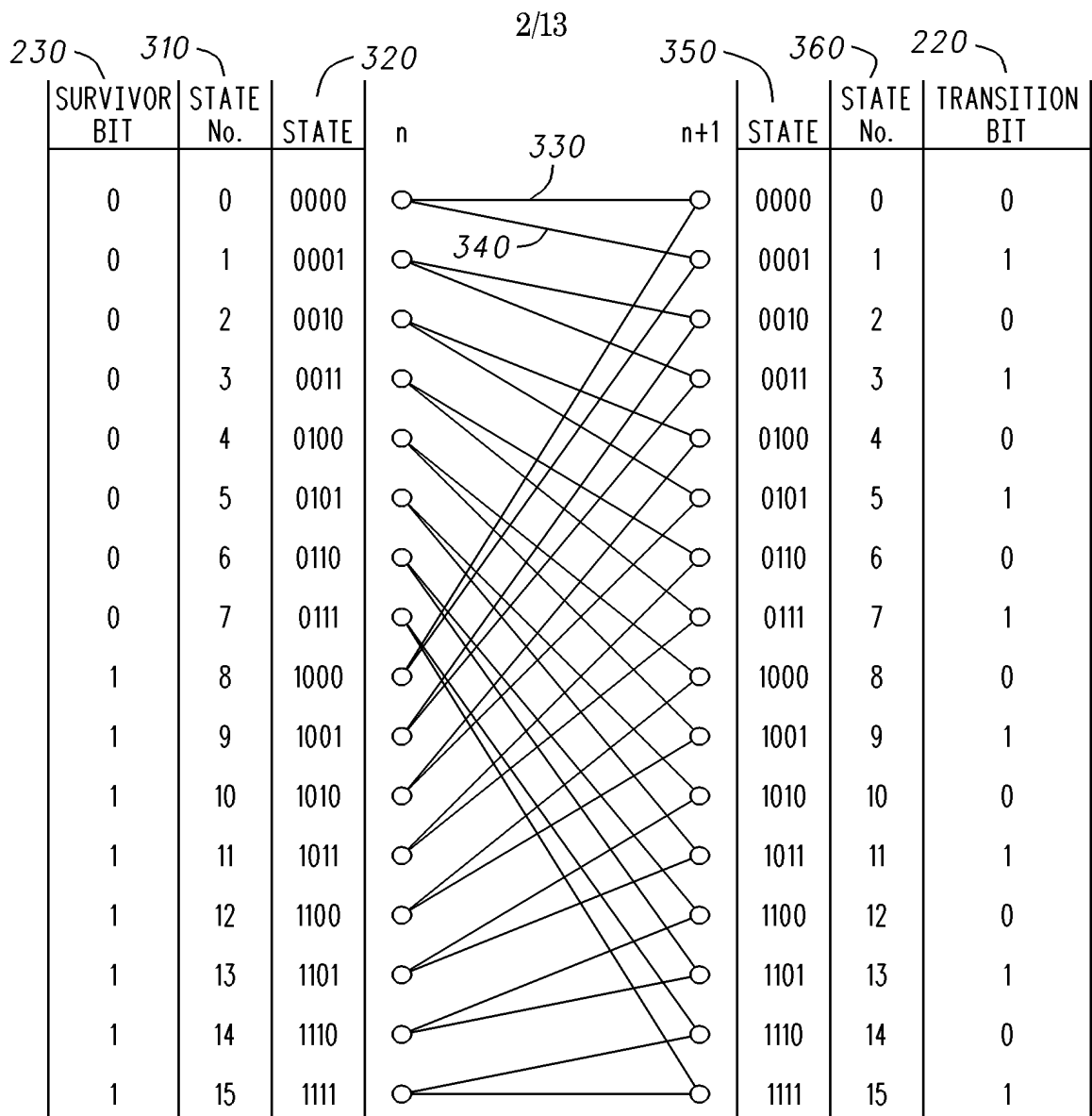


Fig. 3

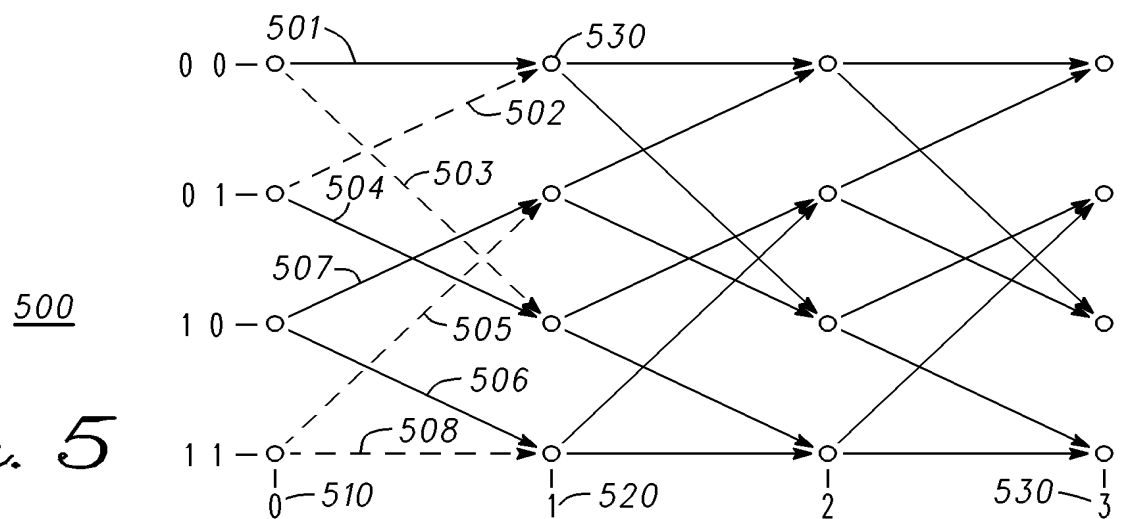
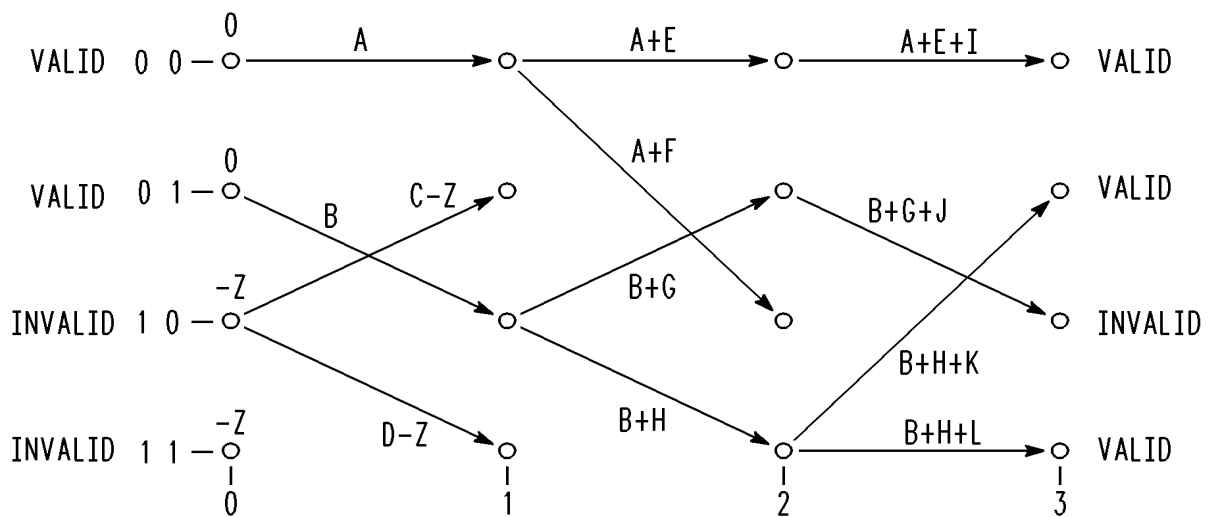
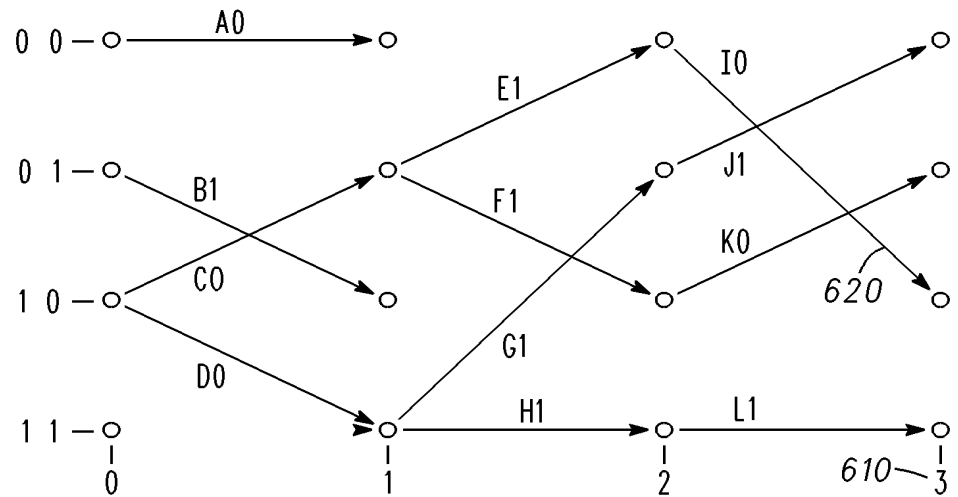


Fig. 5

600  
*Fig. 6**Fig. 8*

720		700		710
n	$q_n$	$F(q_n, 0)$	$F(q_n, 1)$	
0	00000	s	$F(q_n, 0) - 2s_5$	
1	00001	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) - 2s_5$	
2	00011	$F(q_{n-1}, 0) - 2s_2$	$F(q_n, 0) - 2s_5$	
3	00010	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) - 2s_5$	
4	00110	$F(q_{n-1}, 0) - 2s_3$	$F(q_n, 0) - 2s_5$	
5	00111	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) - 2s_5$	
6	00101	$F(q_{n-1}, 0) + 2s_2$	$F(q_n, 0) - 2s_5$	
7	00100	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) - 2s_5$	
8	01100	$F(q_{n-1}, 0) - 2s_4$	$F(q_n, 0) - 2s_5$	
9	01101	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) - 2s_5$	
10	01111	$F(q_{n-1}, 0) - 2s_2$	$F(q_n, 0) - 2s_5$	
11	01110	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) - 2s_5$	
12	01010	$F(q_{n-1}, 0) + 2s_3$	$F(q_n, 0) - 2s_5$	
13	01011	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) - 2s_5$	
14	01001	$F(q_{n-1}, 0) + 2s_2$	$F(q_n, 0) - 2s_5$	
15	01000	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) - 2s_5$	
16	10000	-s	$F(q_n, 0) + 2s_5$	
17	10001	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) + 2s_5$	
18	10011	$F(q_{n-1}, 0) + 2s_2$	$F(q_n, 0) + 2s_5$	
19	10010	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) + 2s_5$	
20	10110	$F(q_{n-1}, 0) + 2s_3$	$F(q_n, 0) + 2s_5$	
21	10111	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) + 2s_5$	
22	10101	$F(q_{n-1}, 0) - 2s_2$	$F(q_n, 0) + 2s_5$	
23	10100	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) + 2s_5$	
24	11100	$F(q_{n-1}, 0) + 2s_4$	$F(q_n, 0) + 2s_5$	
25	11101	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) + 2s_5$	
26	11111	$F(q_{n-1}, 0) + 2s_2$	$F(q_n, 0) + 2s_5$	
27	11110	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) + 2s_5$	
28	11010	$F(q_{n-1}, 0) - 2s_3$	$F(q_n, 0) + 2s_5$	
29	11011	$F(q_{n-1}, 0) + 2s_1$	$F(q_n, 0) + 2s_5$	
30	11001	$F(q_{n-1}, 0) - 2s_2$	$F(q_n, 0) + 2s_5$	
31	11000	$F(q_{n-1}, 0) - 2s_1$	$F(q_n, 0) + 2s_5$	

Fig. 7

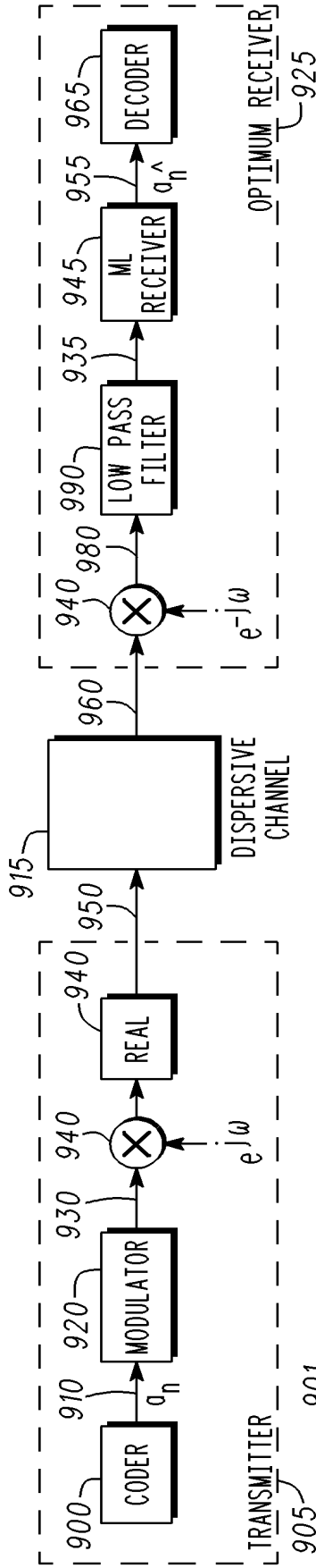


Fig. 9

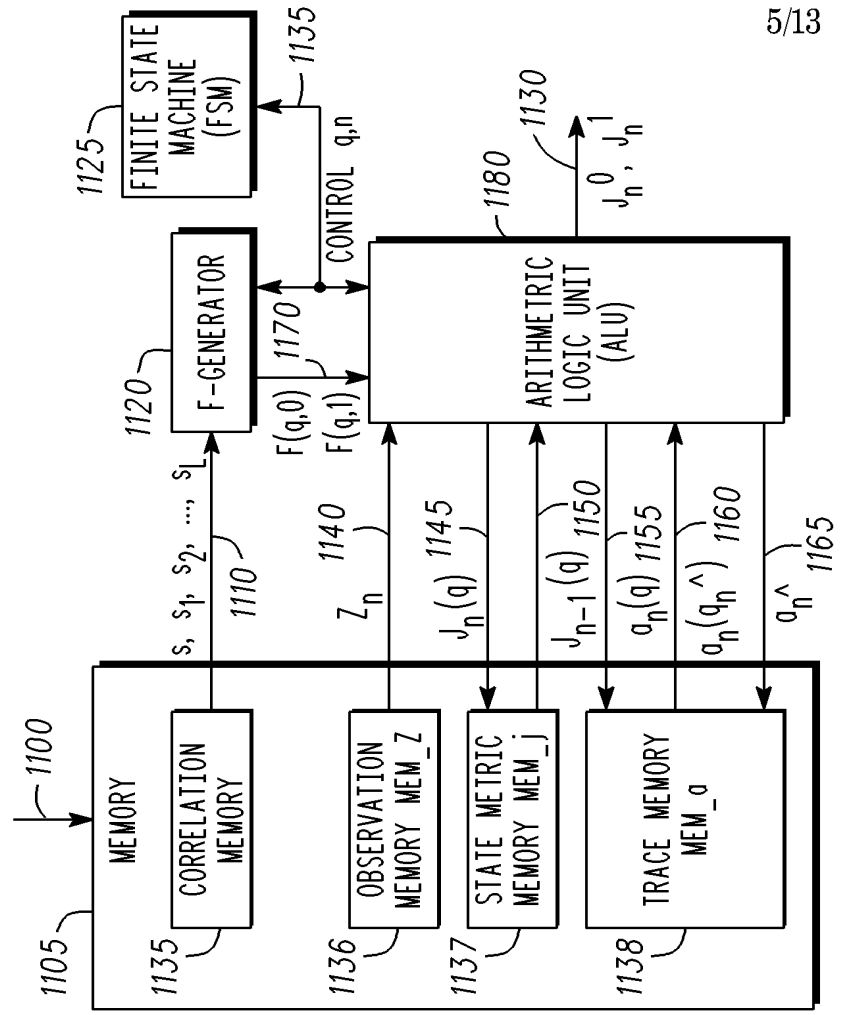
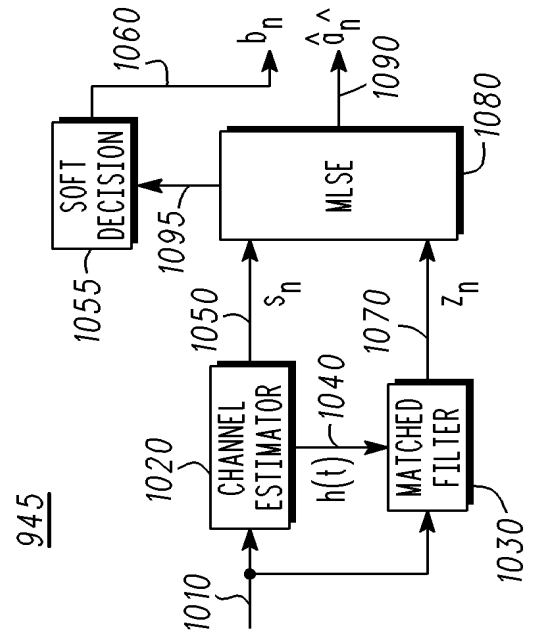


Fig. 11

1080

Fig. 10



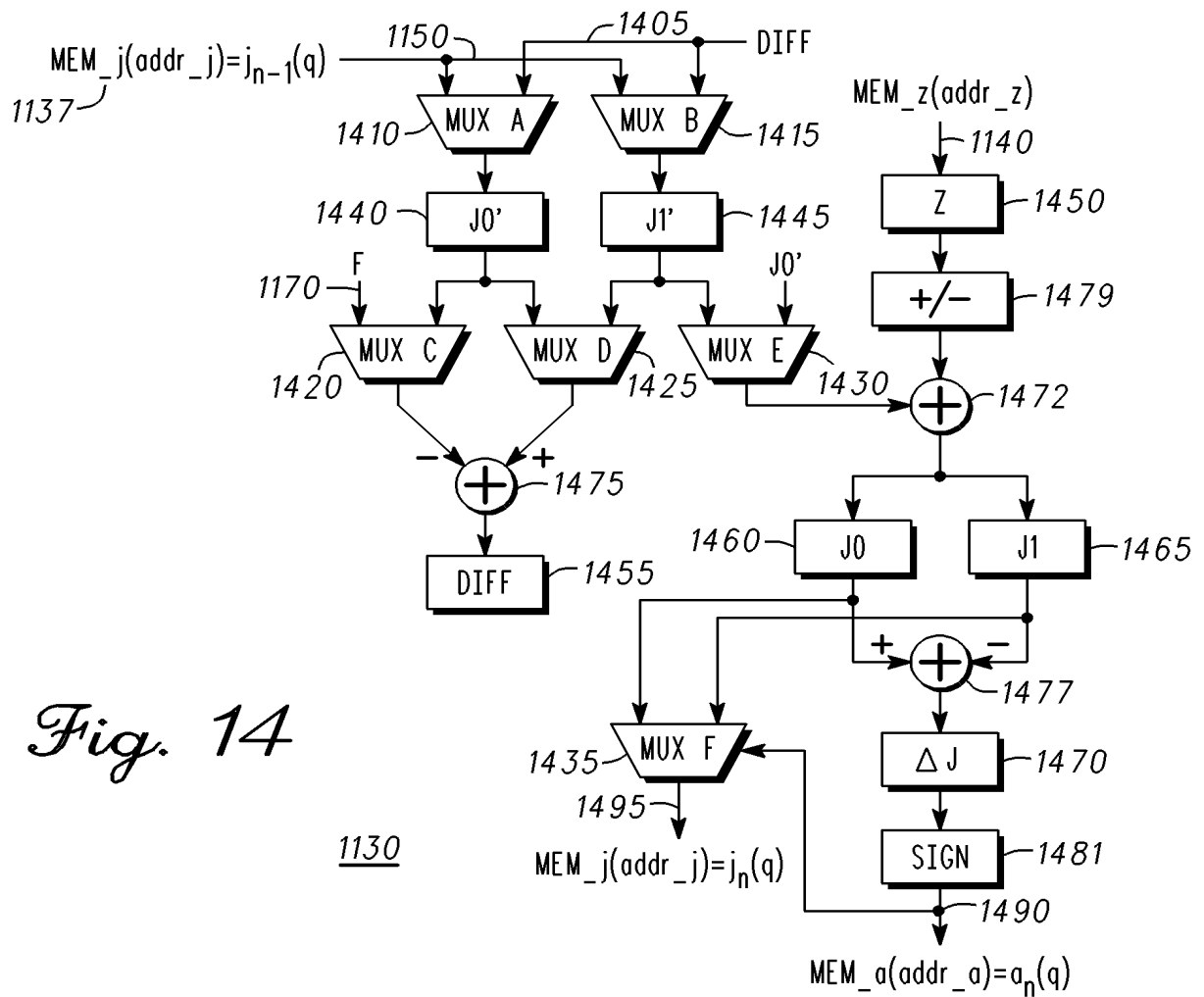
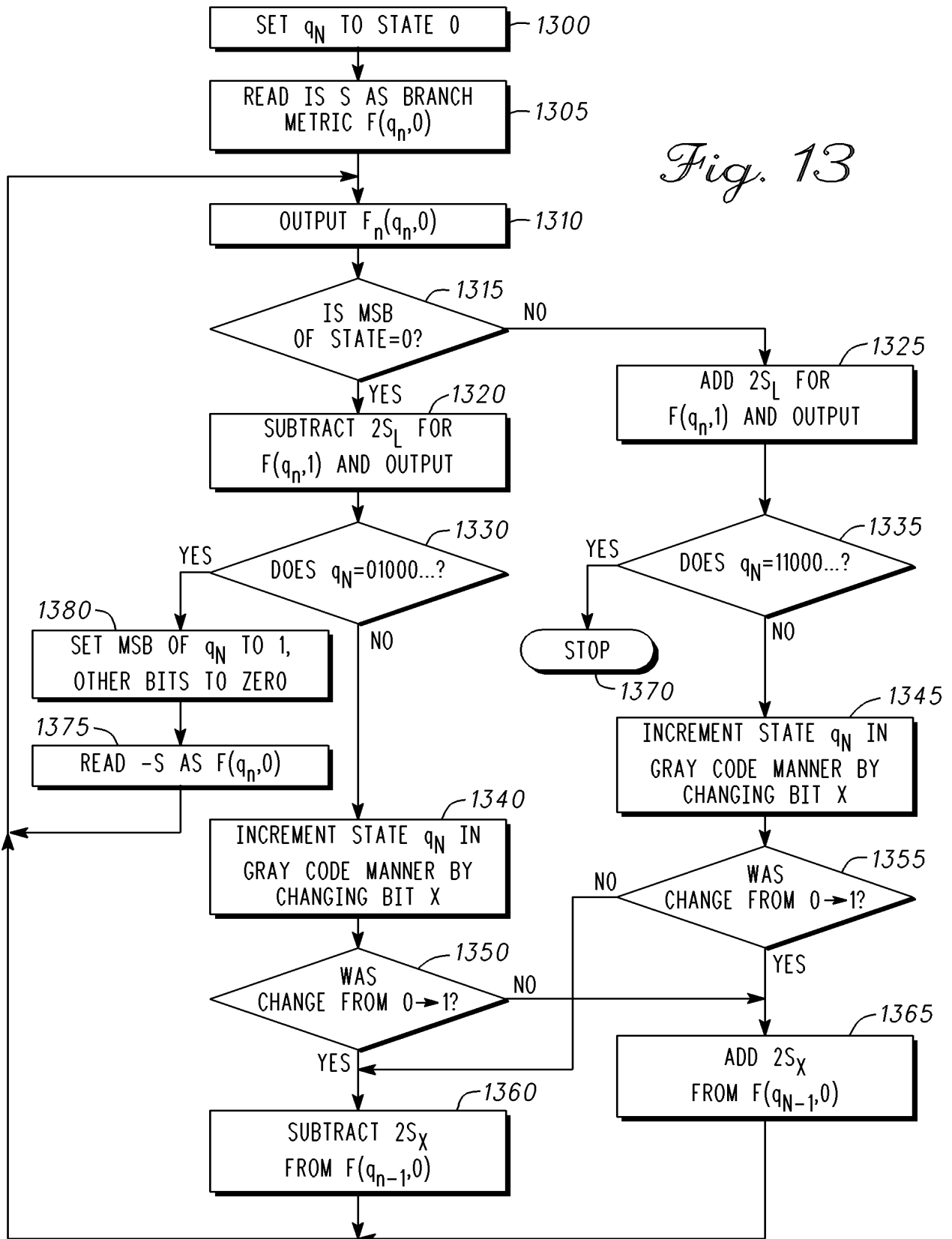
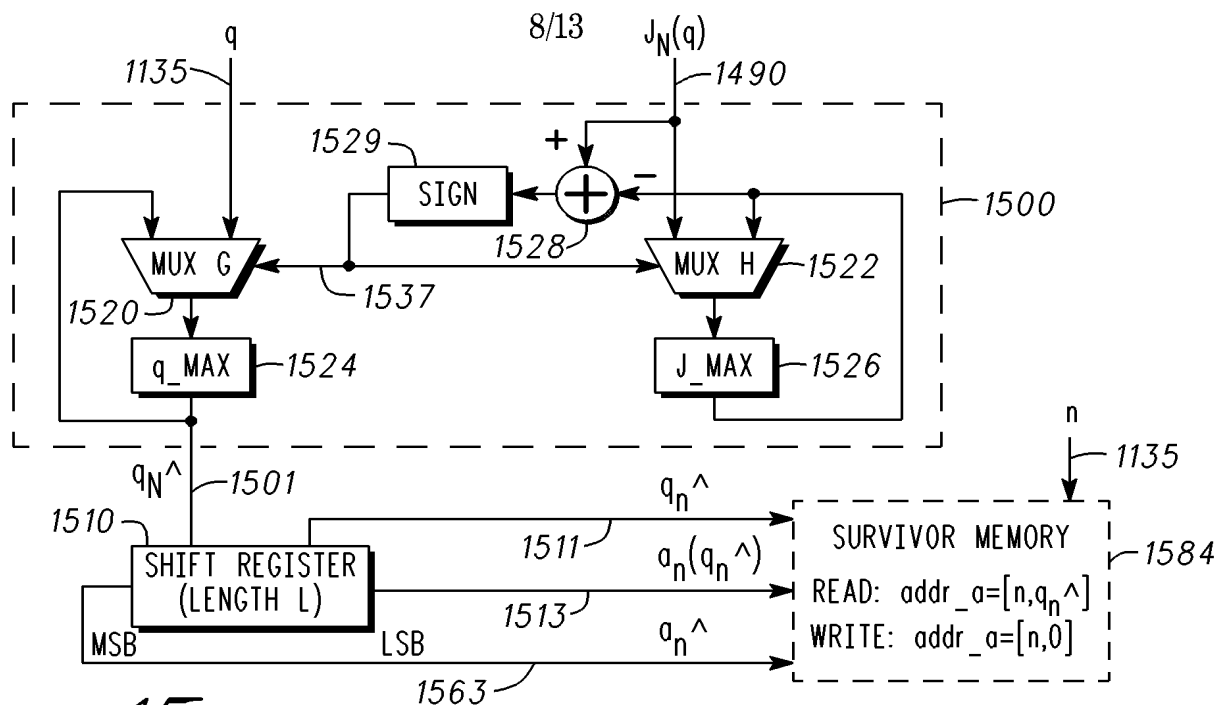
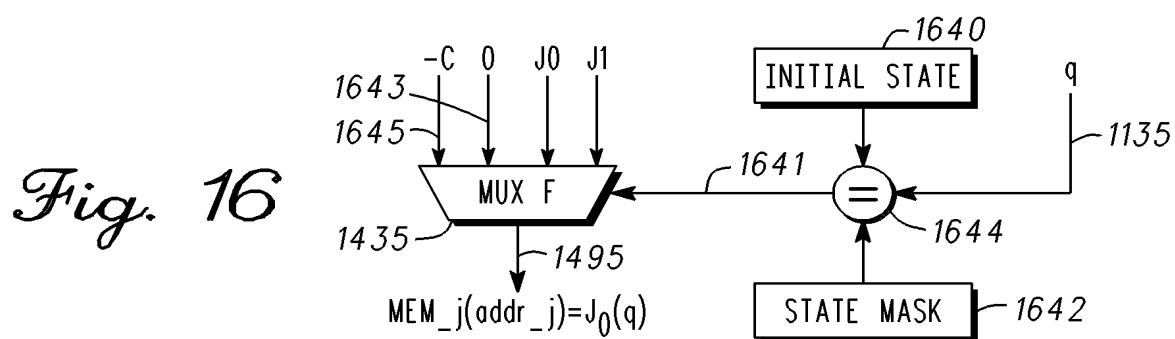


Fig. 13

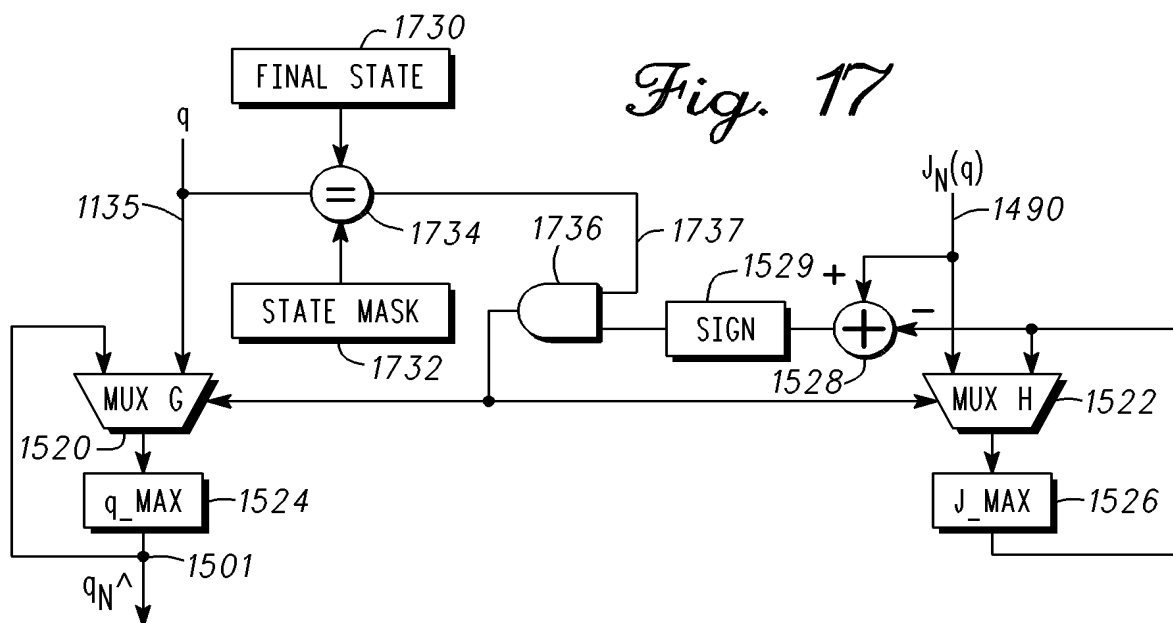




*Fig. 15*      1130

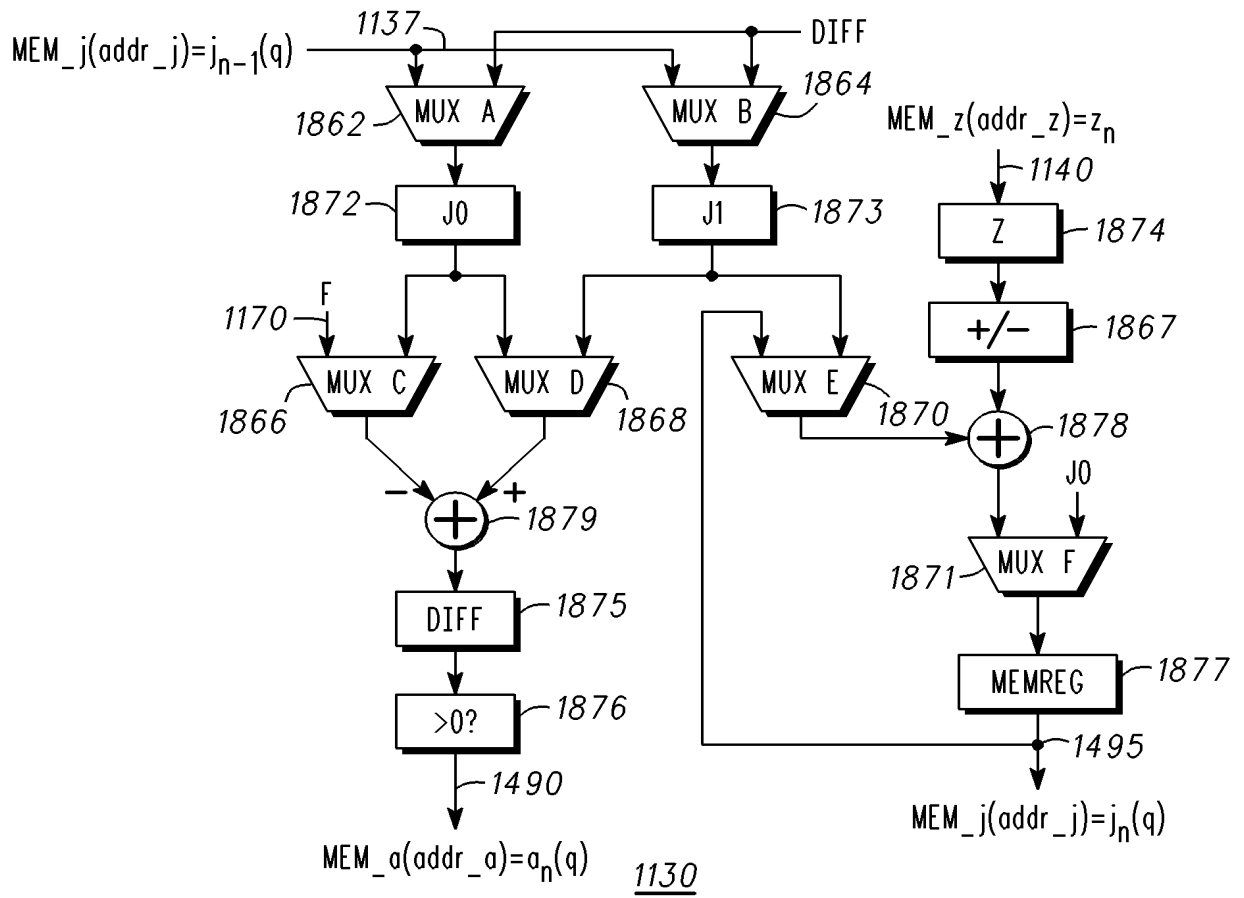


*Fig. 16*



*Fig. 17*





*Fig. 18*

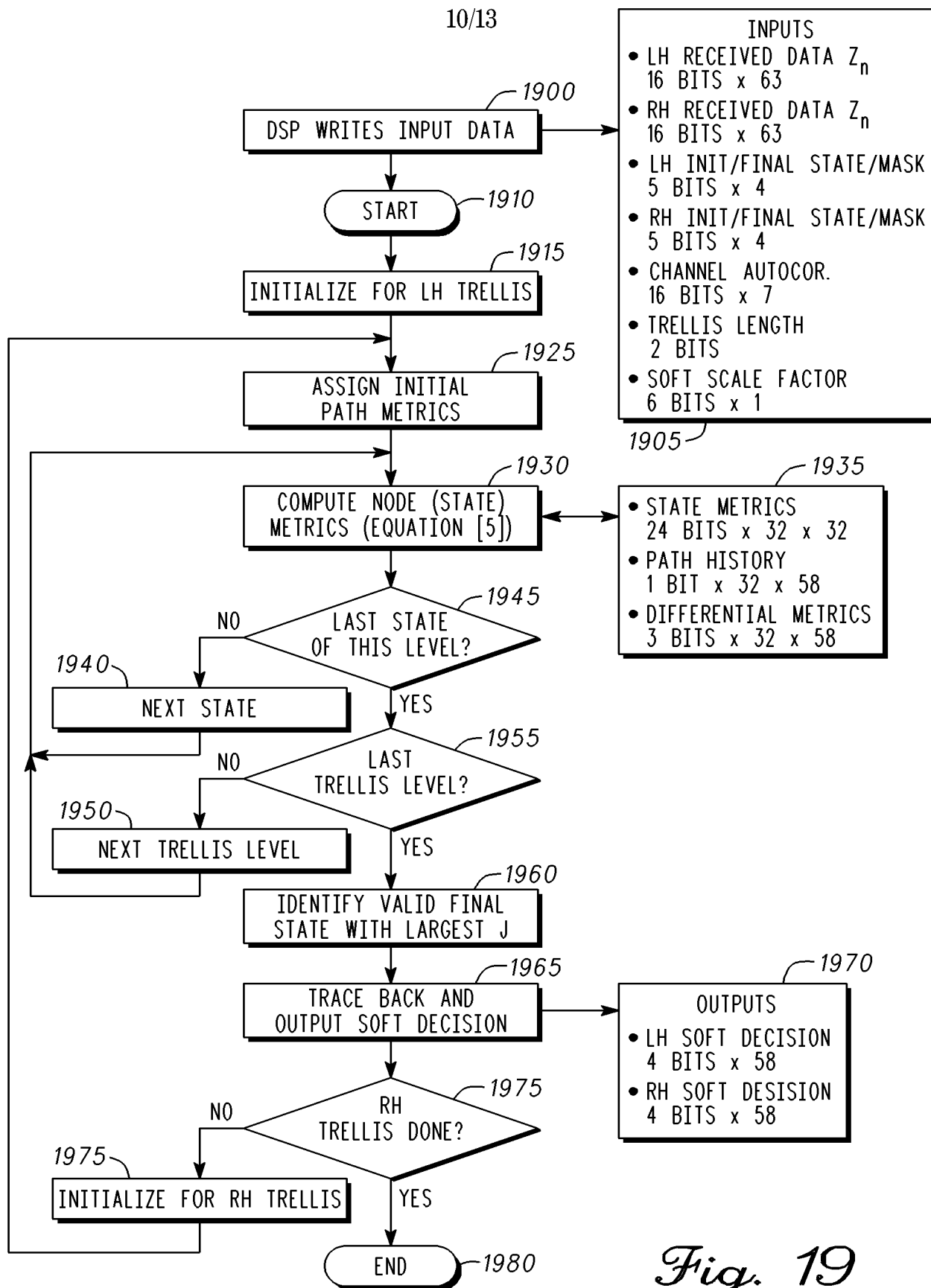
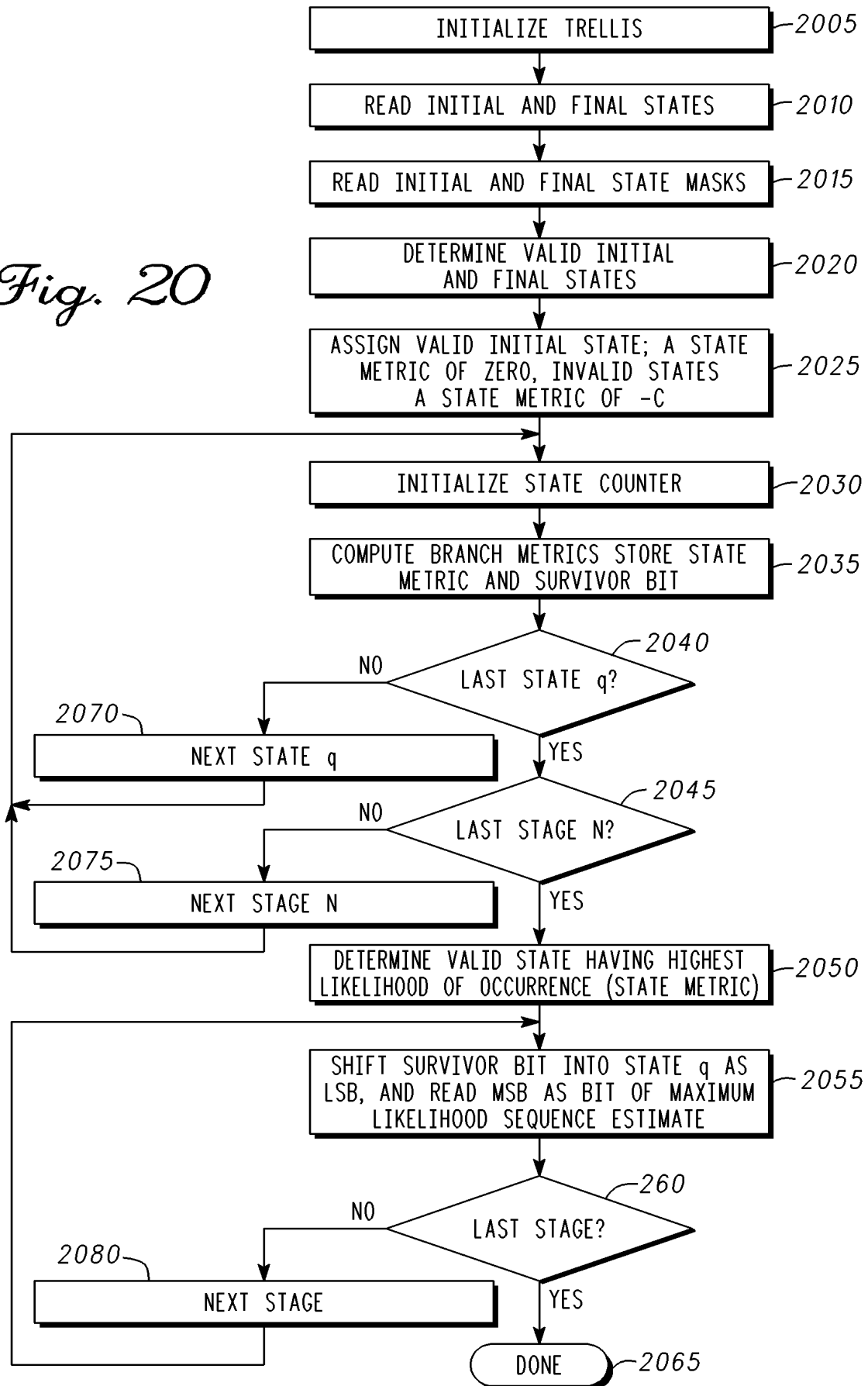


Fig. 19

*Fig. 20*

**TABLE 1**

ALU AND F-GENERATOR PROCESSING STEPS VERSUS CLOCK MODULUS VALUE

MODULUS VALUE	MOD=0	MOD=1
ALU STEPS	A,D,G,H,J	B,C,F,I
F-GENERATOR STEPS	1*,3,4,5	2*,6

NOTE\*: STEPS 1,2 ARE FOR INITIAL STATE ONLY

**TABLE 2**

REQUIRED NUMBER OF PROCESSING CLOCK CYCLES

FSM PHASE	No. PROCESSING CLOCK CYCLES	EXPLANATION
1. FORWARD TRACE INIT.	0	RESET MEMORY
2. FORWARD TRACE	$2^L \times 2 \times N$	$2^L$ STATES x 2 CLOCK CYCLES PER STATE x N TRELLIS STAGES
3. BACKWARD TRACE INIT.	0	CONCURRENT WITH STAGE N OF FORWARD TRACE PHASE
4. BACKWARD TRACE	N	N TRELLIS STAGES X ONE CLOCK CYCLE PER STAGE

**TABLE 3**

MEMORY REQUIREMENTS

PARAMETER REQUIRING STORAGE (MEMORY MODULE)	MEMORY REQUIREMENT, BLOCK LENGTH N, CHANNEL MEMORY L	MEMORY REQUIREMENT(GSM) N=58, L=5, WORD=16 BITS
BRANCH METRICS	NONE	0 BITS
CORRELATION (MEM_COR)	L+1 WORDS	96 BITS
STATE METRICS (MEM_j)	$2 \times 2^L$ WORDS	1024 BITS
SURVIVOR METRICS (MEM_a)	$N \times 2^L$ BITS	1856 BITS

**TABLE 4**

REGISTER CONTENTS OF PRIOR KNOWLEDGE ABOUT INITIAL AND FINAL STATE FOR GSM

		RHS DATA BLOCK
INITIAL STATE	11000	$P_{22}P_{23}P_{24}P_{25}P_{26}^*$
INITIAL STATE MASK	11100	00000
FINAL STATE	$P_1P_2P_3P_4P_5^*$	00011
FINAL STATE MASK	00000	00111

NOTE\*: MIDAMBLE BIT PATTERN= $P_1P_2...P_{25}P_{26}$ **TABLE 5**

ALU AND F-GENERATOR PROCESSING STEPS VERSUS CLOCK MODULUS VALUE

MODULUS VALUE	MOD=0	MOD=1	MOD=3
ALU STEPS	A,E,K	B,C,F,G	D,H,I,J
F-GENERATOR STEPS	1*,3,4,5		2*,6

NOTE\*: STEPS 1,2 ARE FOR INITIAL STATE ONLY